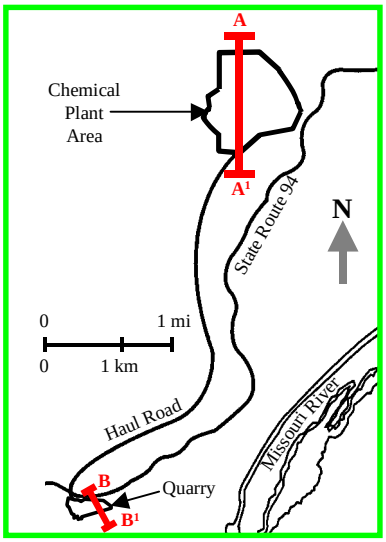
Vadose Zone Fact Sheet
Weldon Spring Site

Background: The Weldon Spring Site is located approximately 48 km (30 mi) west of St. Louis, Missouri. The site consists of two non-contiguous areas: 1) the 10.5 hectare (26 acre) raffinate pit and the 67.2 hectare (166 acre) chemical plant area, and 2) the 3.6 hectare (9 acre) quarry area located southwest of the chemical plant. The plant has been deactivated and the site has been undergoing environmental restoration since 1985.



Issues: There are no significant issues. Remediation is proceeding in an orderly fashion.

Vadose zone infiltration: Infiltration occurred at surface water bodies, drainage ditches, deteriorated underground sewer lines, and exposed areas; and through direct precipitation.

Vadose zone characterization/remediation: The site is undergoing active remediation. Contaminated soils and debris at the quarry and chemical plant sites are being excavated. All site waste will be entombed in an engineered disposal facility. Remediation is expected to be completed in 2002.

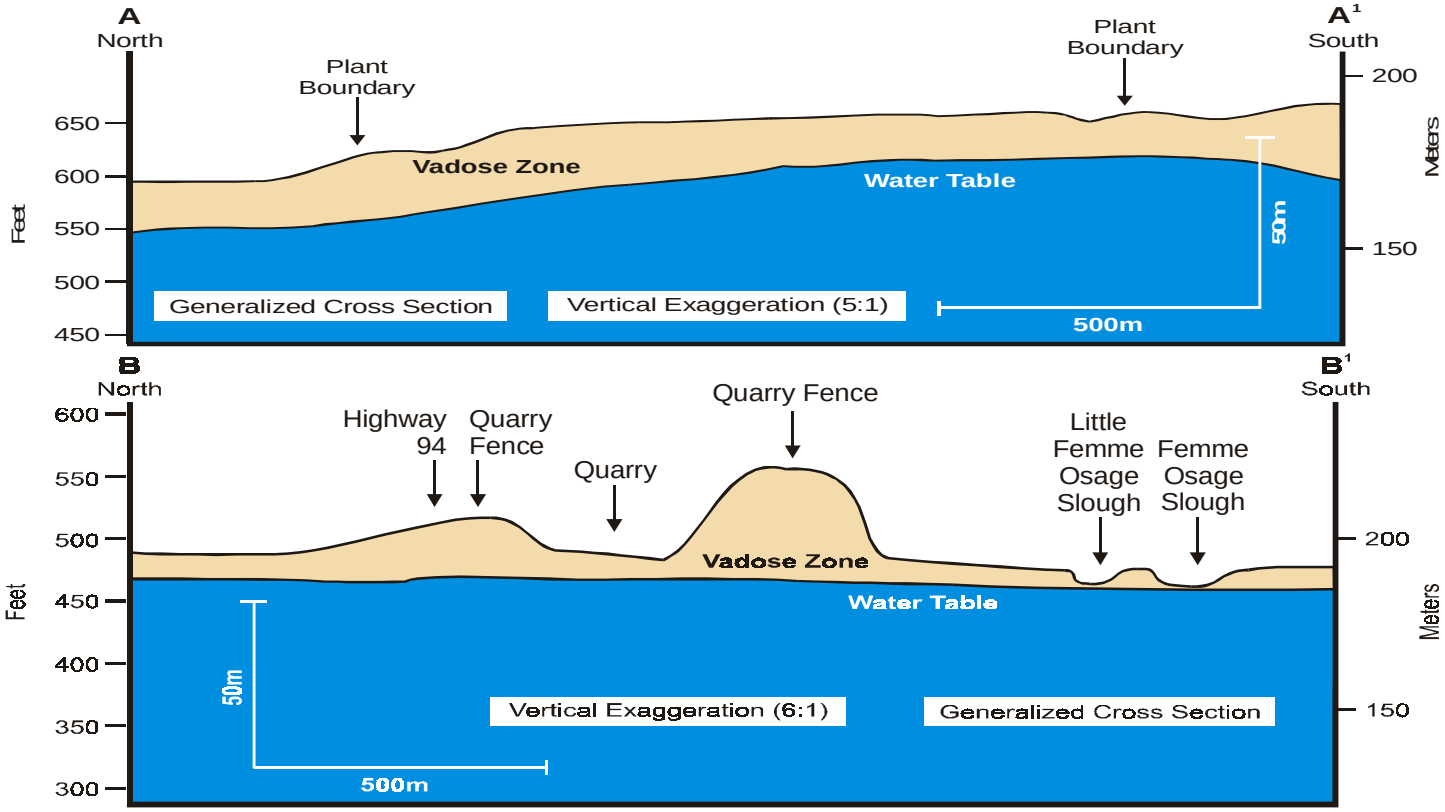
Precipitation: The average annual precipitation is 94 cm (37 in).

Surface waters: The chemical plant area has several streams, springs, and seeps. On-site surface water bodies (four raffinate pits, Ash Pond, and Frog Pond) at the chemical plant have been cleaned up and graded over. An existing pond in the quarry will be filled and graded over.

Geology: Elevations range from 185 m (608 ft) to 205 m (672 ft) at the chemical plant area and 137 to 171 m (450 to 560 ft) at the quarry. The surface slopes are gentle with major surface features manmade. The geology is characterized by 3 to 18 m (10 to 60 ft) of clayey material overlying limestone bedrock. The limestone bedrock is exposed at the quarry. The limestone bedrock ranges from highly fractured and weathered in the upper portions to more competent and homogeneous at depth.

Vadose zone thickness: Varies from zero to more than 20 m (65 ft).

Major contaminants of concern: High explosives, radionuclides, volatile organic compounds, nitroaromatic compounds, polychlorinated biphenyl, and inorganic constituents including trace metals and asbestos.

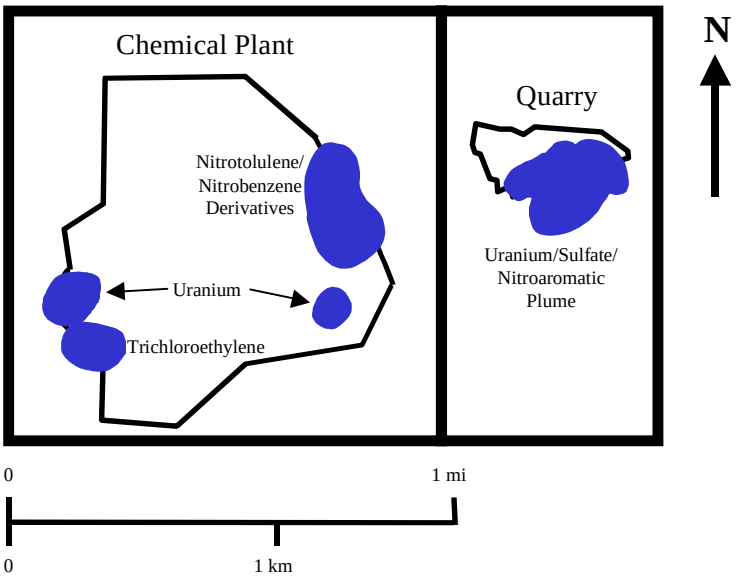


September 2000

Ground Water Fact Sheet
Weldon Spring Site

Background: The Weldon Spring Site is located approximately 48 km (30 mi) west of St. Louis, Missouri. The site consists of two non-contiguous areas: 1) the 10.5 hectare (26 acre) raffinate pit and the 67.2 hectare (166 acre) chemical plant area, and 2) the 3.6 hectare (9 acre) quarry area located southwest of the chemical plant. The plant has been deactivated and the site has been undergoing environmental restoration since 1985.

Hydrogeology: Three principal aquifer systems have been identified in the area: the alluvial aquifers, the shallow bedrock aquifer system, and the deep bedrock aquifer system. The alluvial aquifers are absent in the chemical plant area. The primary mechanisms that contribute to the transport of contaminants to the ground water are: 1) leaching and seepage from the surface and near surface sources through the unsaturated zone into the ground water, 2) infiltration of surface water into the ground water in losing streams, and 3) direct infiltration from the quarry pond. Ground water flow in the limestone aquifers occurs primarily within fractures and bedding planes. The ground water flow has resulted in solution enlargement of the fractures and bedding planes.



Location of Ground Water Plumes
at Chemical Plant and Quarry Areas

Issues: The contaminated quarry ground water threatens the nearby well fields that supply drinking water to St. Charles County.

Ground water characterization/remediation: Remedial investigations have been completed for the ground water operable units and Records of Decisions have been signed. The ground water alternative selected for both the plant and quarry areas is to conduct long term monitoring and treat the contaminated ground water at the plant area, if necessary. In situ oxidation of trichloroethylene (TCE) is also being evaluated at the chemical plant.

Ground water use: The alluvial aquifer is a major source of drinking water for St. Charles County.

Plume	Primary Contaminants	Depth	Remedial Approach
Quarry	2,4-DNT* uranium	6 m (20 ft)	Monitor
Chemical Plant	2,4-DNT; TCE; nitrate; uranium	15 m (50 ft)	Proposed in-situ oxidation of TCE; monitor

*DNT is a high explosive